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MECHANICAL DRAWING
COPY PLATES

RASMUSEN

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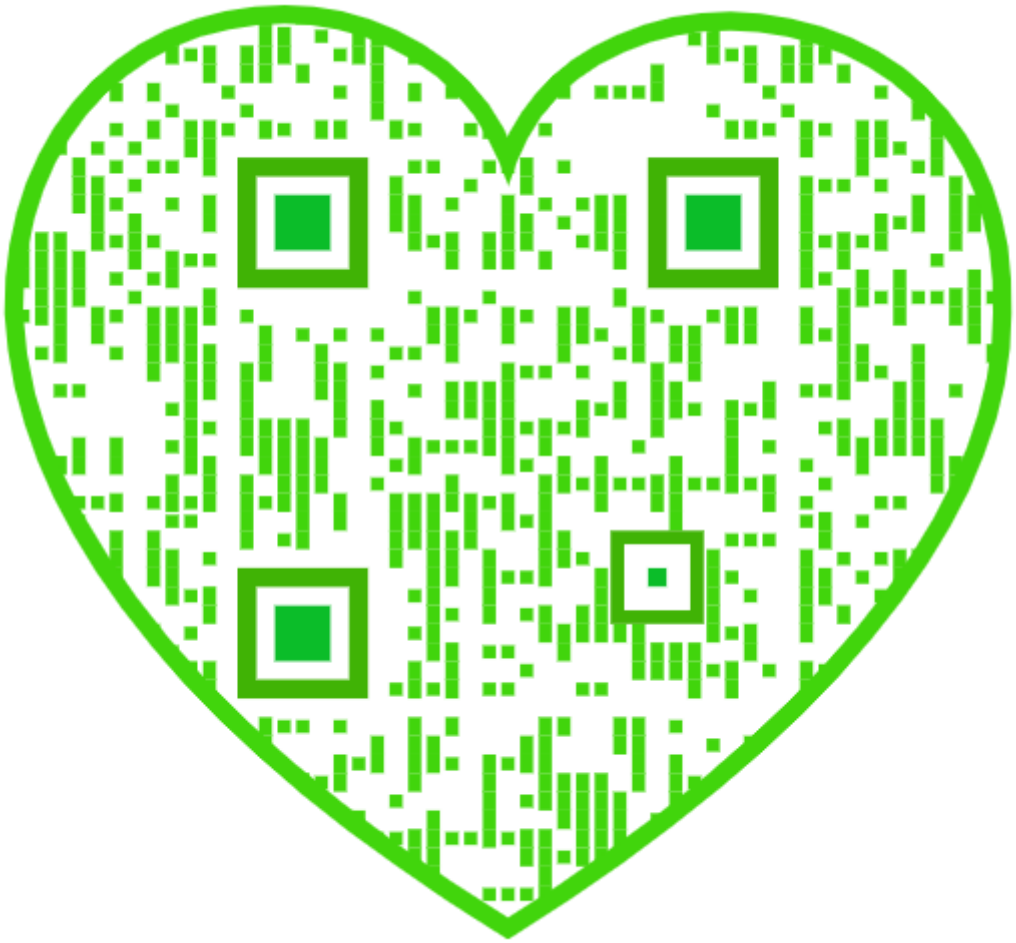

MECHANICAL DRAWING COPY PLATES

BY

J. E. RASMUSEN

Professor of Engineering Drawing, Department of Applied Mechanics and Machine Design

University of Nebraska

CHICAGO AND LINCOLN

The University Publishing Company

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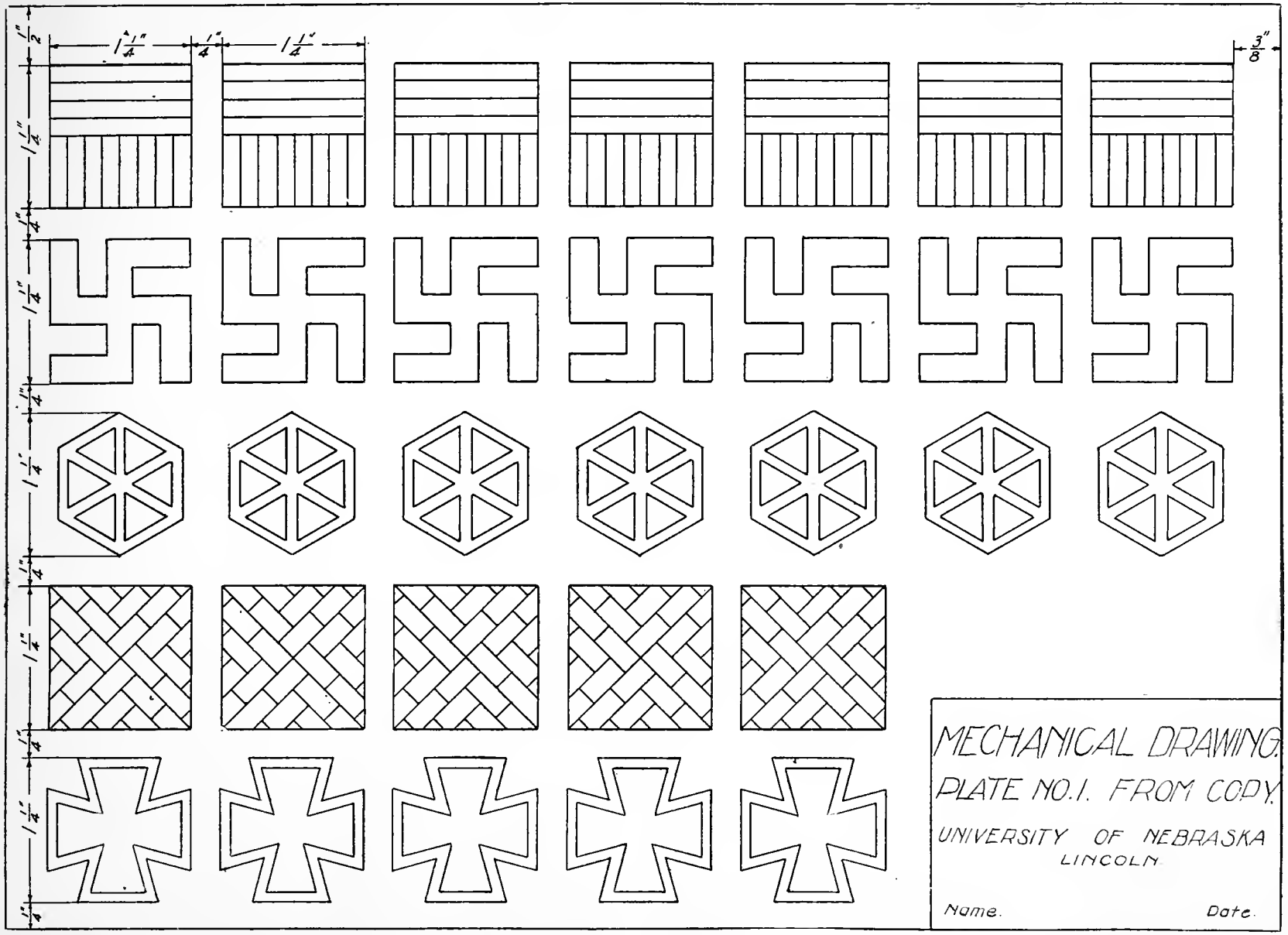
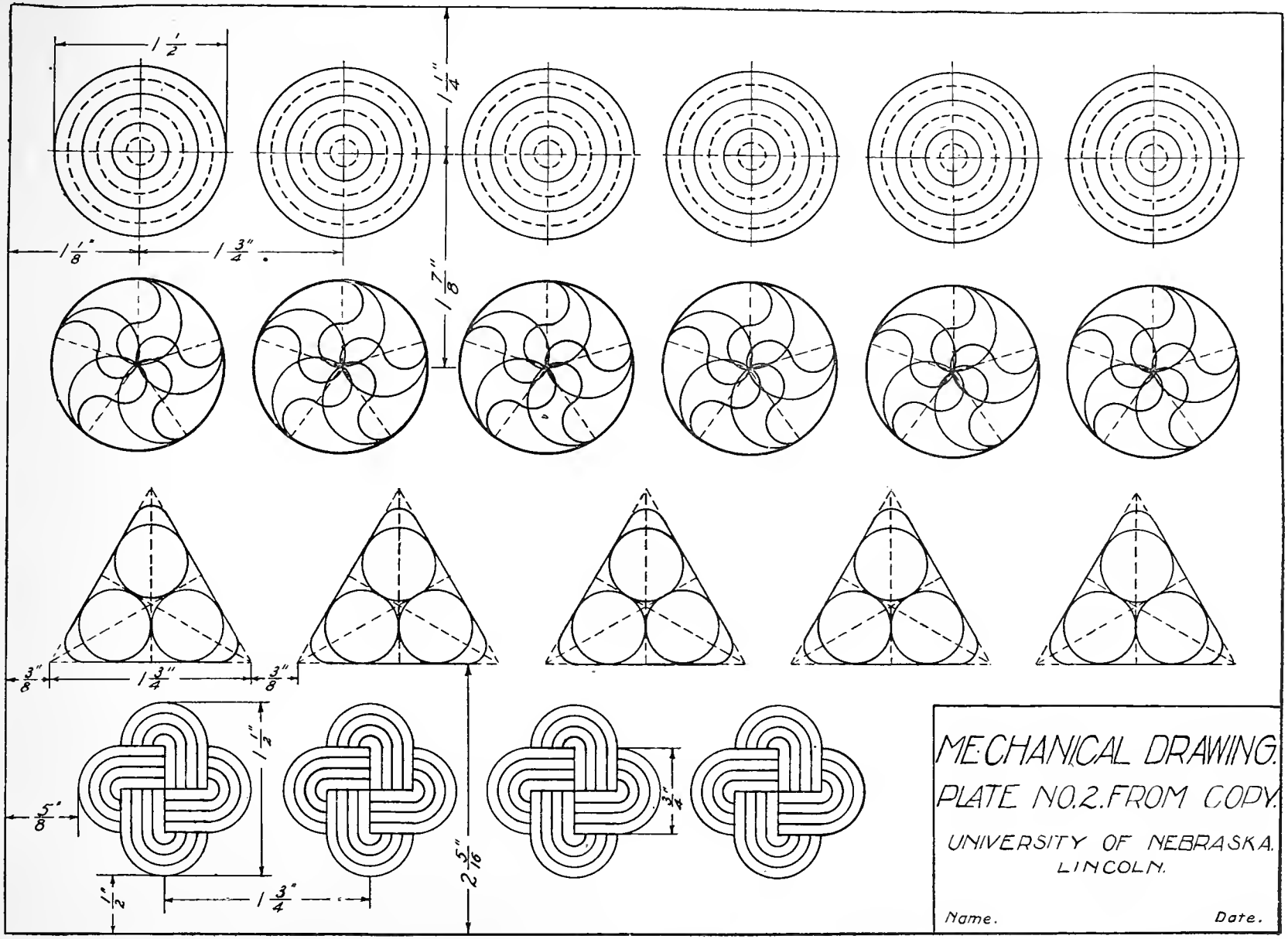

1 1/4"
1/4"
1 1/4"
3/8"
1/2"
1 1/2"
1/4"
1 1/2"
1/4"
1 1/4"
1/4"
1 1/2"
1/4"
1 1/2"
1/4"
MECHANICAL DRAWING.
PLATE NO. I. FROM COPY.
UNIVERSITY OF NEBRASKA
LINCOLN
Name.
Date.

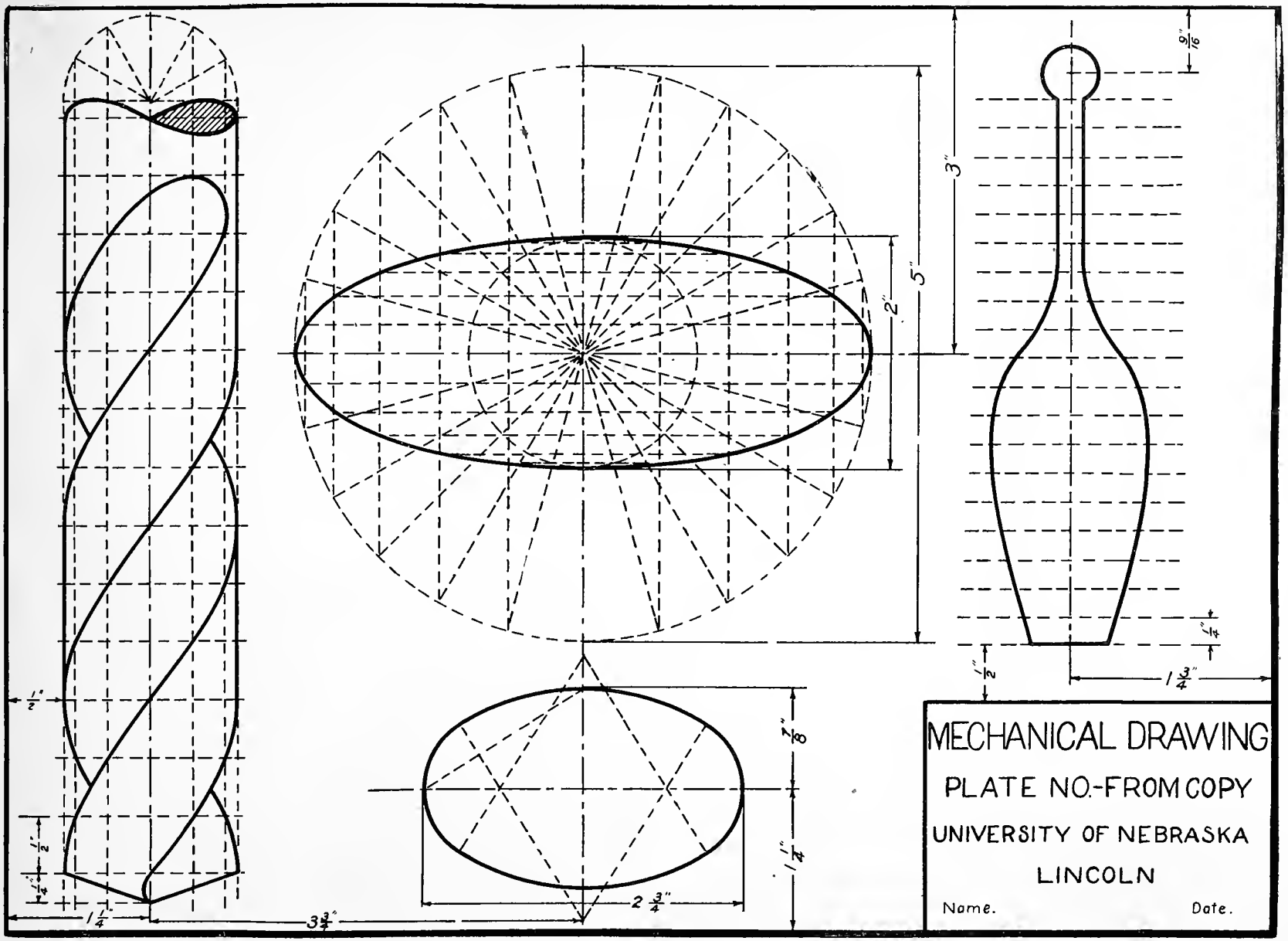


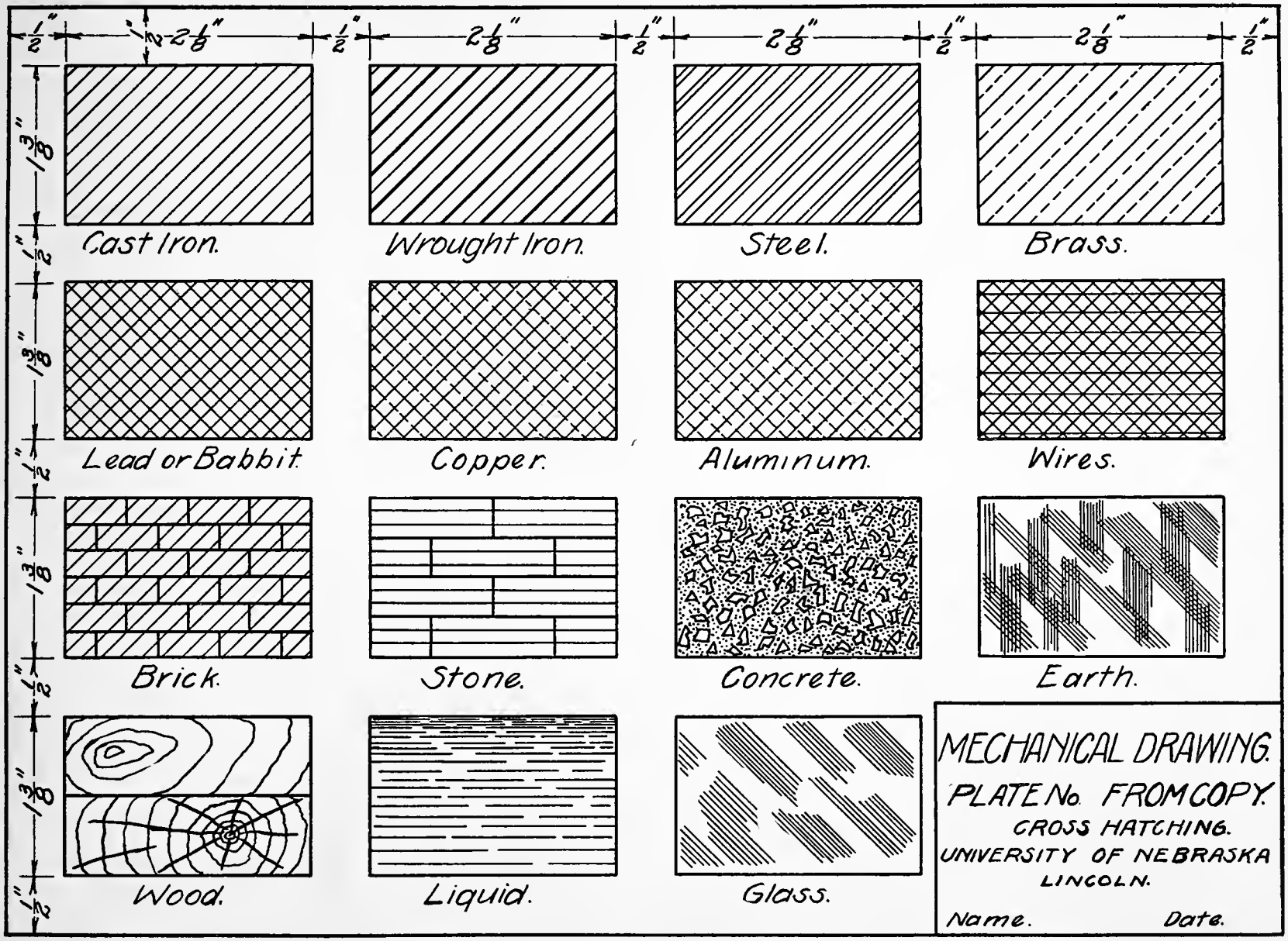
MECHANICAL DRAWING.

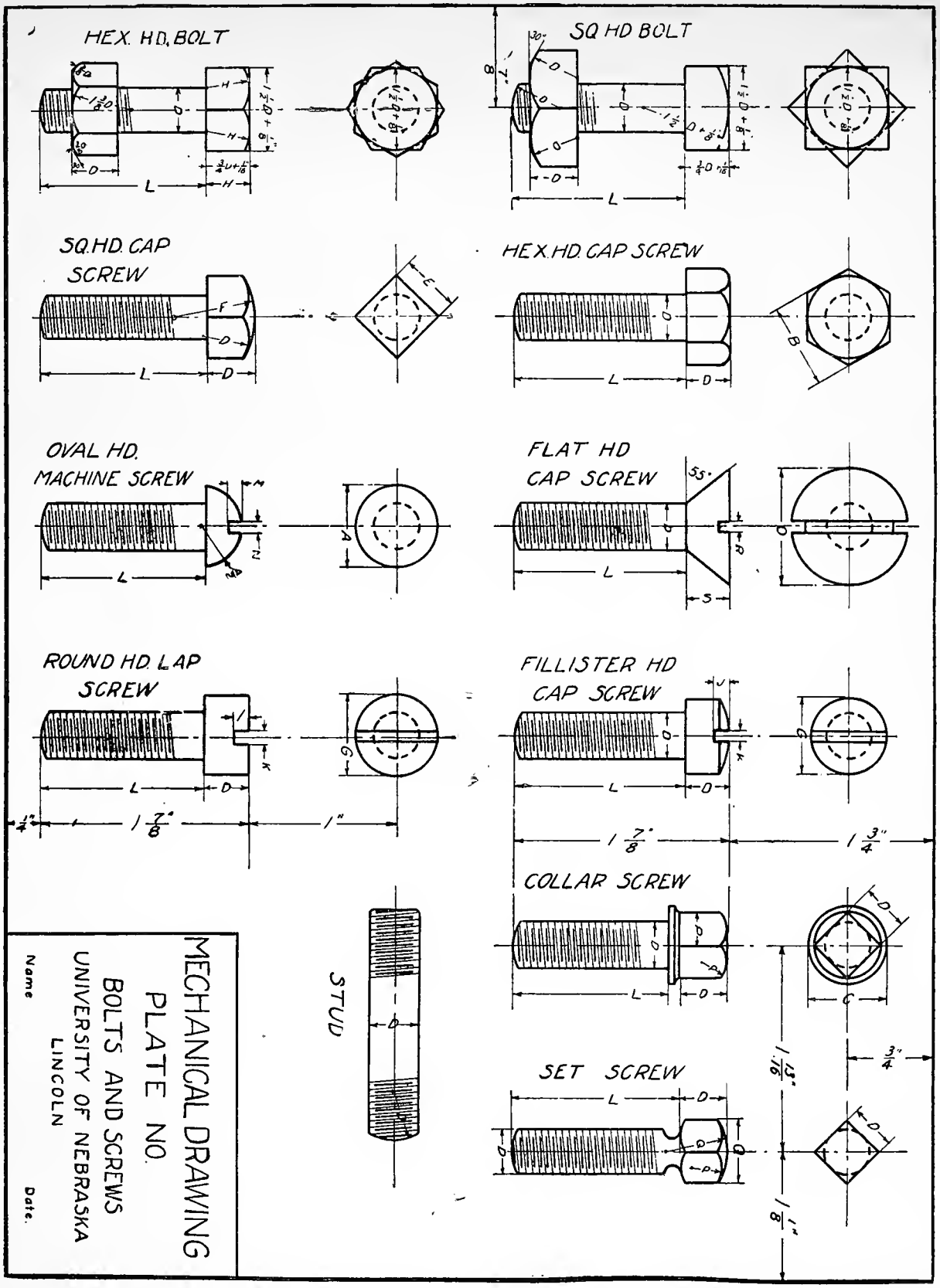
PLATE NO. 2. FROM COPY.

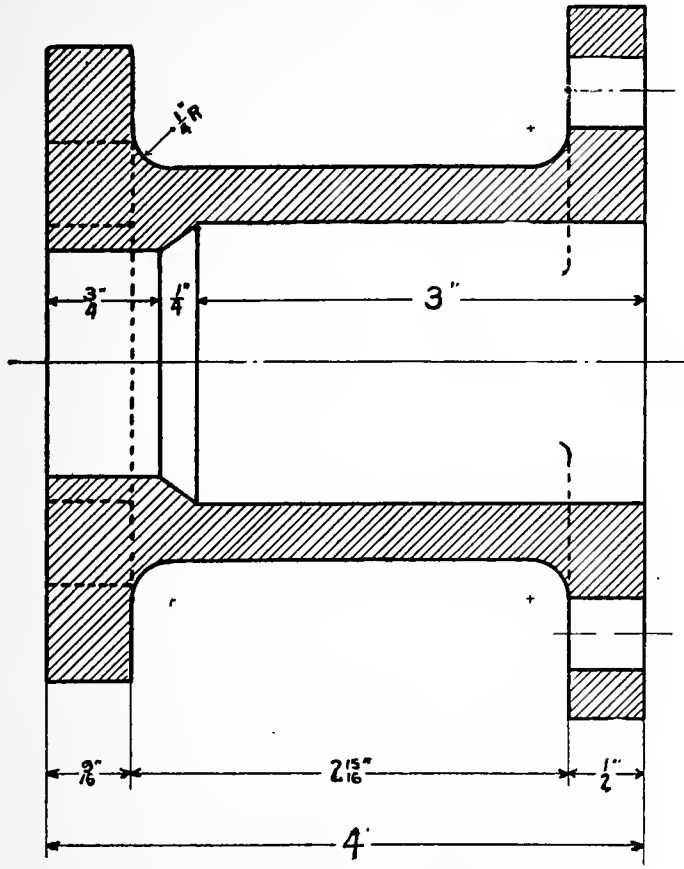
UNIVERSITY OF NEBRASKA.
LINCOLN.

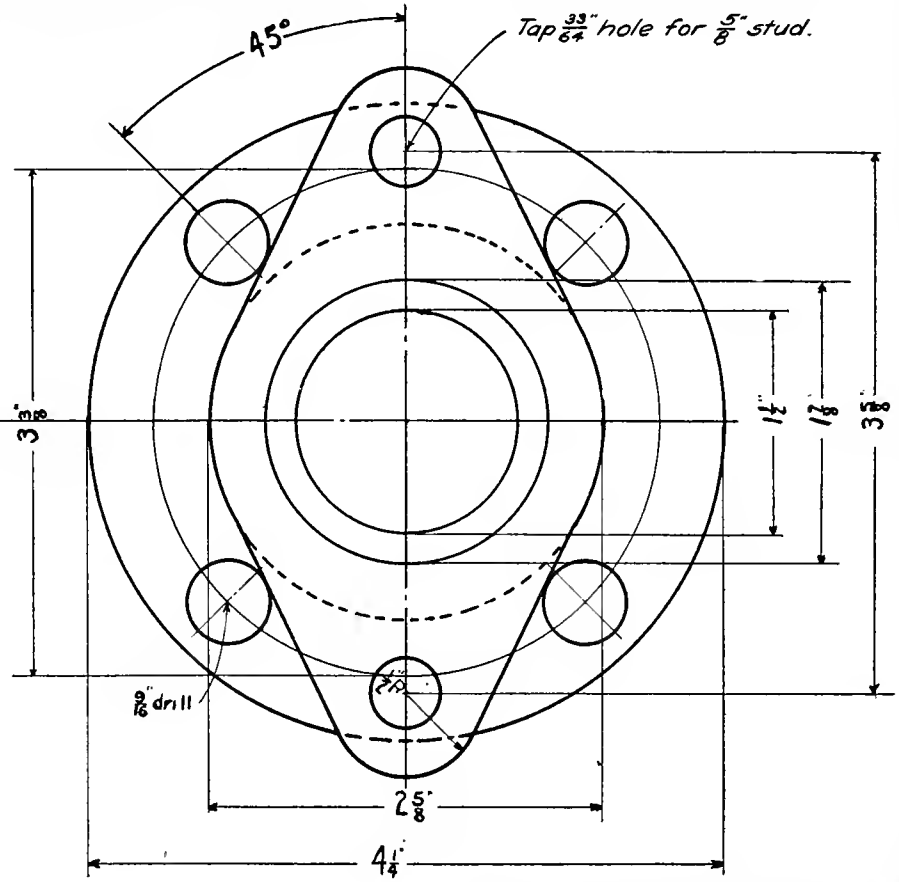
Name. Date.


3"
5"
2"
9/16"
1/4"
1/2"
1 3/4"
1/2"
1/4"
1 1/4"
3 3/4"
2 3/4"
1 1/4"
7/8"
MECHANICAL DRAWING
PLATE NO.-FROM COPY
UNIVERSITY OF NEBRASKA
LINCOLN
Name.
Date.


1/2"
2 1/8"
3/8"
Cast Iron.
Wrought Iron.
Steel.
Brass.
Lead or Babbit.
Copper.
Aluminum.
Wires.
Brick.
Stone.
Concrete.
Earth.
Wood.
Liquid.
Glass.
MECHANICAL DRAWING.
PLATE No. FROM COPY.
CROSS HATCHING.
UNIVERSITY OF NEBRASKA
LINCOLN.
Name.
Date.


HEX. HD. BOLT
SQ HD BOLT
SQ. HD. CAP SCREW
HEX. HD. CAP SCREW
OVAL HD. MACHINE SCREW
FLAT HD CAP SCREW
ROUND HD. CAP SCREW
FILLISTER HD CAP SCREW
COLLAR SCREW
SET SCREW
STUD
MECHANICAL DRAWING
PLATE NO.
BOLTS AND SCREWS
UNIVERSITY OF NEBRASKA
LINCOLN
Name
Date.





Make an isometric drawing only, of the above.

MECHANICAL DRAWING

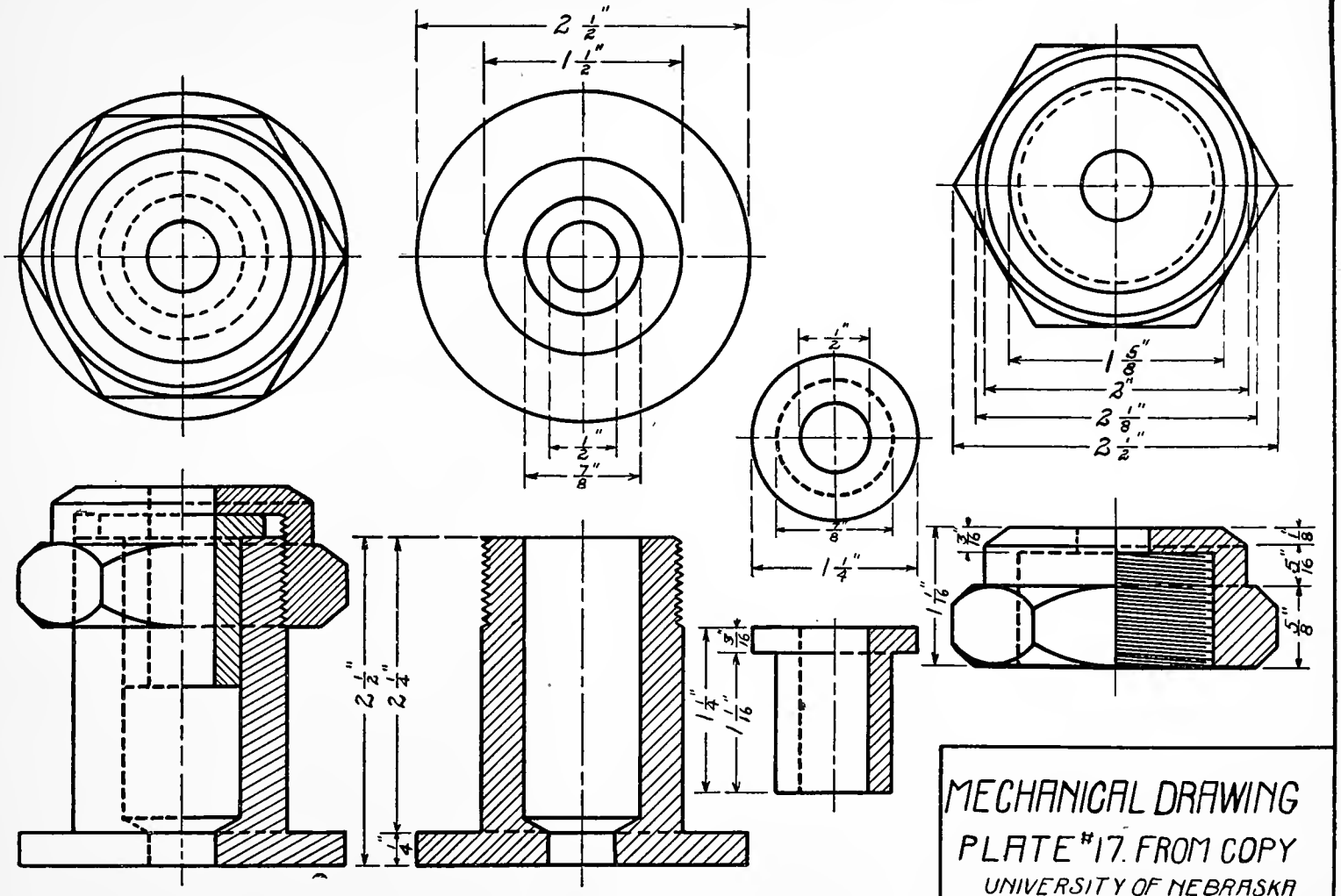
PLATE-ISOMETRIC NO. 3.

STUFFING BOX. C.I

UNIVERSITY OF NEBRASKA

LINCOLN.

Name. Date.



MECHANICAL DRAWING

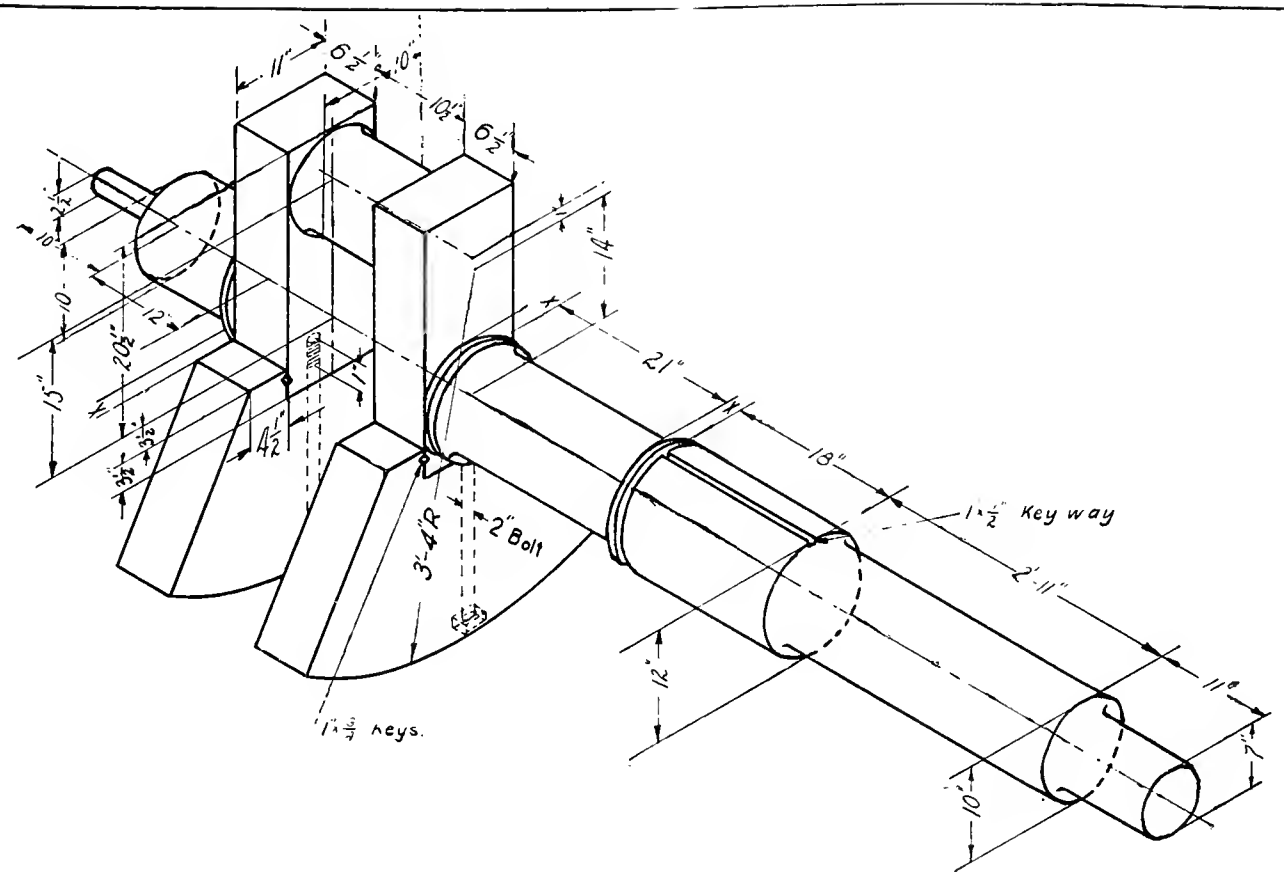
PLATE #17. FROM COPY

UNIVERSITY OF NEBRASKA

LINCOLN.

Name

Date



Required - Mechanical Drawing.

X = three spaces, each ¾"

X

MECHANICAL DRAWING.

PLATE NO.-

CRANK SHAFT

UNIVERSITY OF NEBRASKA

LINCOLN.

Name

Date

SOME SUGGESTIONS ON LETTERING

1. The lettering of a drawing is part of its clothing and has much to do with its appearance. Bad lettering on a drawing, even though the drawing itself may be perfectly drawn, spoils its appearance. Good lettering is therefore a necessary requirement. By good lettering is not meant fancy lettering, but letters that are simple, neat and clear. This any student can acquire with practice.

2. First steps. The first thing that is necessary for the beginner is to fix accurately in his mind the form of each letter. To practice making a letter without knowing its form is futile. Many students try to make letters and fail to make progress because they have not observed their form closely.

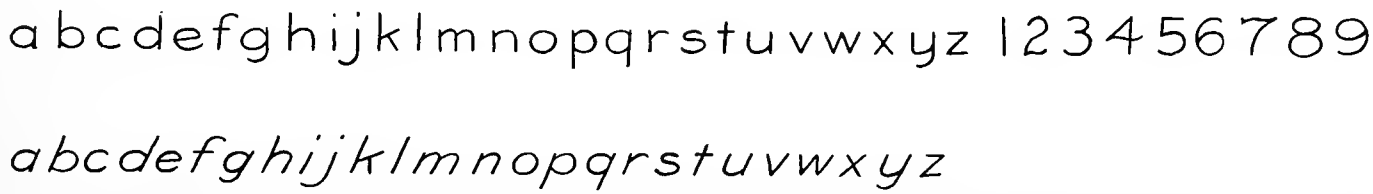
It is sufficient to get one style of alphabet and get it well. If after acquiring one style of alphabet the student wishes to vary his lettering by using other styles of letters he can do so. But only one style of letters should be used in the same word, sentence, or paragraph, as different styles of letters should not be mixed. Practice is necessary for all students, the amount of which varies with each individual, and the more care that is exercised in practicing, the more rapid will be the progress.

3. **The Alphabet.**

There are two types of letters, known as the upper case and lower case, so-called from the position they occupy in the printer's type case. The upper case, or capitals, are shown in Fig. a; the lower case, or small letters in Fig. b.

Fig. a.

Fig. b.



This style of making the alphabet is in substance the Reinhardt letters, from the name of its author, Mr. C. W. Reinhardt. The object of the author was to produce a letter that was clear and neat and easily and rapidly made freehand. As this style, or some modification of it, has been most universally used recently, we shall adopt it for the student to practice in this course.

4. **Aids to the Memory.**

It is perhaps easier for the student to remember the form of each letter by putting similar letters in groups. Thus in the lower case letters a b d g p and q, are very much the same. The letter a with a very slight change forms the letters d g q. In the letters b and p the same loop reversed is put on the other side of the straight line of the letter a. Another group is m n h r u y. m n h r have only slight differences. u is the n upside down and y has only a small addition to the straight line of u. The S is made with the larger loop at the bottom to give it a more stable appearance. The t is simply a straight line with the cross-bar on the guide line. The upper part of t extends half way to the upper guide line except when the distance between the two upper guide lines is 1/32 of an inch or less, when it should extend to the upper guide line. Care should be taken not to make the V and W with curved lines thus U V or W W

The letter f is simply a straight line with a curve added between the upper guide lines, and the cross-bar is on the guide line as in t The letter j is the letter f reversed with no cross-bar and a dot added.

In the upper case or capitals there are some similarities as P R --- V W --- M N H A variation in M N A & 4 is to be noticed. This variation in M and N is used to save space because the sides can be placed closer together. When A and 4 are made small the variation is desirable to prevent the ink from running together in the upper part.

5. **Guide Lines.** In order to keep the letters of uniform height guide lines are used, the letters extending fully to the guide lines at top and bottom. It is best for the beginner to put in all guide lines in pencil. After some practice two guide lines will suffice. The distance apart of the guide lines is usually in the following proportion:

6. **Slant.** The slant of the letter may be 90° (vertical) or 60°; or any slant between these two. The student should practice the slant that seems most natural to him. To some students 90° or vertical will seem easier, to others 60°, and still others would select some angle between the two. But care should be taken to keep the slant uniform as words formed from perfect letters of different slant present an uneven, untidy appearance. For example Minakami (incorrect) Minakami (correct).

7. **Size of Letters.** The size of the letters vary. The width depends largely on circumstances. For lower case lettering the height mostly used varies between 1/16" and 1/8" for the short letter.

8. **Lettering Pens.** The choice of a lettering pen varies with the individual. A Gillott No. 303 is a pen of medium stiffness and used by many draftsmen. This pen has a tendency to scratch while new and should be worn a little to round off the sharp corners. Ball pointed and round pointed pens are also used.

Free Hand Lettering Lower Case

Natural Slant

abcdefghijklmnopqrstuvwxyz *abcdefghijklmnopqrstuvwxyz*

abcdefghijklmnopqrstuvwxyz

Lower case letters are not all the same height. They are divided into two groups. The first group is one space in height. The second is one and one-half spaces.

Vertical Letters

abcdefghijklmnopqrstuvwxyz abcdefghijklmnopqrstuvwxyz

abcdefghijklmnopqrstuvwxyz

The usual dimensions for free hand lower case letters are one eighth of an inch high for one space letters and three sixteenths of an inch high for one and one-half space letters. Letters are about the same height as width.

One Space Letters, Natural Slant.

aceimnorsuvwxz *aceimnorsuvwxz* *aceimnorsuvwxz*

One Space Letters, Vertical

aceimnorsuvwxz aceimnorsuvwxz aceimnorsuvwxz

One and One Half Space Letters, Natural Slant

bdfhkltgjpqy *bdfhkltgjpqy* *bdfhkltgjpqy*

One and One Half Space Letters, Vertical

bdfhkltgjpqy bdfhkltgjpqy bdfhkltgjpqy

Letters of Similar Form

ceoadgqbp	*hmnruyj*	*kltfwixz*	*s*	*ceoadgqbp*
ceoadgqbp	hmnruyj	kltfwixz	s	ceoadgqbp

MECHANICAL DRAWING

PLATE NO.

FREE HAND LETTERING NO.1

UNIVERSITY OF NEBRASKA

LINCOLN

NAME DATE

Varied Styles of Free Hand Lettering

This Style is Easy For Many

Free Hand Lettering is like Free Hand Drawing. First get a Few Fundamental Principles. Then Work Out the Details. The Appearance of the Details Will Depend Largely on the Student's Ability to See What Relations and Ratios Will Give the Best Effect in the Problem at Hand. A Good Rule to Follow is: Lay Out the Space You Have to Use. Find Out How Much Lettering is Necessary. Then Choose a Style of Lettering That Will Make the Best Appearance for the Given Space.

SHOP NOTES

98 Wanted. Cast Iron
Finish inside with straight reamer,
outside with black enamel.
PATTERN MAKER
Give slight draught,
the drawing shows none

Compressed Type

This will take up but small space and is easy to read if care is taken in making them. Do not run the letters together. Make them clean cut.

PATTERN MAKER

Pattern to be built up as shown in drawing.
6 wanted. MATERIAL Cork Pine

EXTENDED TYPE

JOURNAL BEARING for WOOD-LATHE

SHOP NOTES

To be well filled then finished with lead colored machine paint.

DEPARTMENT OF APPLIED MECHANICS
UNIVERSITY OF NEBRASKA.

MECHANICAL DRAWING
PLATE NO.
FREE HAND LETTERING NO. 2
UNIVERSITY OF NEBRASKA
LINCOLN
NAME DATE

CONVENTIONAL LETTERING for MAP DRAWING.

USED BY

UNITED STATES GEOLOGICAL SURVEY

Countries, Upper Case Vertical - NEBRASKA

Valleys Upper Case Vertical - SHENANDOAH

Peaks, and Passes Lower Case Vertical - Pikes Peak.

Mountains Upper Case Vertical - Cumberland

Roads, Trails and Pikes Upper Case Slant - HAMPTON ROADS.

Canyons Upper Case Vertical - GRAND CANYON

Cities Upper Case Vertical - CHICAGO

Villages - Lower Case Vertical - Smithville.

Streets Lower Case Vertical - Broadway

Railroads Upper Case Slant - BURLINGTON.

Oceans, Upper Case Slant - ATLANTIC

Bays Upper Case Slant - BAFFIN

akes, Upper Case Slant - MICHIGAN

Small Lakes Lower Case Slant - Red Lake

Springs Lower Case Slant - Hot Springs.

Rivers Upper Case Slant Missouri

Small Rivers Lower Case Slant - Tarkio

Creeks Lower Case Slant - Towner.

DEPARTMENT of APPLIED MECHANICS

UNIVERSITY of NEBRASKA.

MECHANICAL DRAWING.

PLATE NO.

FREE HAND LETTERING NO. 3.

UNIVERSITY OF NEBRASKA.

LINCOLN.

NAME. DATE.

FREE HAND LETTERING UPPER CASE.

NATURAL SLANT

ABCDEFGHIJKLMNOPQRSTUVWXYZ-1234567890

ABCDEFGHIJKLMOPQRSTUVWXYZ-1234567890.

ABCDEFGHIJKLMNOPQRSTUVWXYZ.

THE USUAL DIMENSIONS FOR UPPER CASE LETTERS ARE THREE SIXTEENTHS OF AN INCH HIGH AND ONE EIGHTH OF AN INCH WIDE, EXCEPT FOR THE "M" AND "W" WHICH ARE THREE SIXTEENTHS AND ONE FOURTH OF AN INCH WIDE RESPECTIVELY.

VERTCAL

ABCDEFGHIJKLMNOPQRSTUVWXYZ-1234567890.

ABCDEFGHIJKLMNOPQRSTUVXY-1234567890.

ABCDEFGHIJKLMNOPQRSTUVWXYZ.

THE STUDENT SHOULD USE THE STYLE OF LETTER HE CAN MAKE BEST. PROFICIENCY CAN ONLY BE OBTAINED BY CONSTANT PRACTICE. STUDY EACH FORM AND PRACTICE FOR THE PROPER EXECUTION OF IT. NOTE THE HEIGHT AND WIDTH OF EACH LETTER.

USE EITHER VERTICAL OR NATURAL SLANT. ADOPT A STYLE OF LETTERING AND UNTIL YOU HAVE MASTERED IT DO NOT USE ANY OTHER. THE NATURAL SLANT WILL VARY BETWEEN SIXTY AND NINETY DEGREES BUT WHEN USING IT USE THE SAME SLANT THAT YOU USE WHEN WRITING. BE SURE THAT ALL YOUR LETTERS HAVE THE SAME SLANT.

MECHANICAL DRAWING.

PLATE NO.

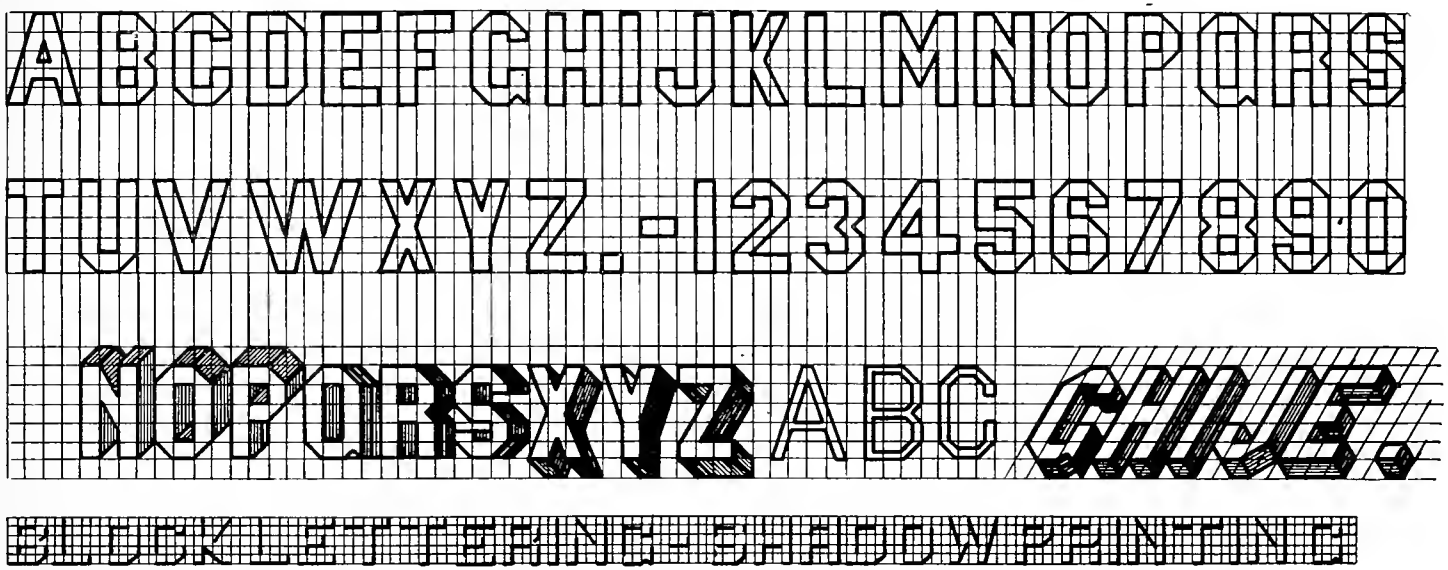
FREEHAND LETTERING NO. 4.

UNIVERSITY OF NEBRASKA.

LINCOLN.

NAME DATE.

MECHANICAL DRAWING



MECHANICAL DRAWING

PLATE NO.

MECHANICAL LETTERING. NO.

UNIVERSITY OF NEBRASKA.

LINCOLN.

Name Date

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